

Section 2 Background

2.2.3 Aeroballistic Testing

There were two main purposes for the test unit drops at SSTB: to test and evaluate ballistic and aerodynamic behavior of various weapon shapes and configurations; and to test the functional operation of internal weapon components, particularly fusing and firing systems, as the test unit fell toward the target. Telemetry was used to record the time and sequence of various operations within the test unit and other pertinent data such as pressure, temperature, vibration, and acceleration. Much of the information concerning the aeroballistic testing is classified. Available information is summarized below.

Sandia used two marine targets (Site **10MA** and Site **10MB**) for aeroballistic testing at the base. The original marine target (Site **10MA**) was located approximately 3,000 feet closer to shore than the target (Site **10MB**) identified in the SI Work Plan. The target was moved farther offshore to the area identified in the SI Work Plan after an errant test drop impacted on the tennis courts in the main base area. Sandia also constructed the Site **10LB** Land Target for aeroballistic testing in the mid-1950s. The total reported number of Sandia test drops prior to cessation of testing in July 1961 averaged about 150 per year, with a peak of 223 in 1952.

Only inert (nonexplosive) test units were dropped at the SSTB. Information reviewed by Sandia (Sandia 1994a,b) does not indicate that any test units dropped at the base, with the exception of one MK-6 "fly-around" unit, contained radioactive materials. The test units typically comprised stainless steel filled with arming, fusing, and firing components with concrete, lead, and/or stainless steel ballast. The test units may also have contained lesser amounts of aluminum and lead (**Pb**)/acid and nickel/cadmium (**Ni/Cd**) battery fragments associated with the arming, fusing, and firing components. The MK-6 "fly-around" unit contained 120 pounds of normal uranium. The unit was accidentally dropped at an unknown location in the Salton Sea during aerial testing of the test unit (Sandia 1994a,b).

The delivery method for the test units employed at the SSTB included both parachute-retarded and nonretarded (i.e., free-falling) drops. The nonretarded test units fragmented on impact at both the land and marine targets. "Penetrator-type" weapon shapes (designed to penetrate below the ground surface) were reportedly also tested at the land target. Standard practice included recovery of the nonretarded test unit fragments, parachute-retarded test units, and penetrator-type test units from the Site **10LB** Land Target for reuse and/or analysis of the fusing and firing mechanisms. Only one test unit is reported to have penetrated the ground too deeply to be recovered (Sandia 1994a).

The Site **10MA** and **10MB** water targets were also used for practice bombing by the Strategic Air Command (SAC). Sandia and SAC were responsible for testing and development of different parts of the atomic bomb. Sandia's main responsibility was for the fusing and firing mechanisms. SAC reportedly dropped more than 2,550 test units at the water target; Sandia dropped fewer than 1,200 test units. Sandia provided photographic and telemetry services, communications, and scoring assistance during the SAC testing activities.